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IS 9175-5 (1985): Rationalized Steels for Automobile and Ancillary Industry, Mechanical and Physical Properties - Part 5 35C8 Grade Steel [MTD 16: Alloy Steels and Forgings]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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IS : 9175 (Part 5) - 1985

Indian Standard

**SPECIFICATION FOR
RATIONALIZED STEELS FOR
AUTOMOBILE AND ANCILLARY INDUSTRY,
MECHANICAL AND PHYSICAL PROPERTIES**

PART 5 35C8 GRADE STEEL

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INDIAN STANDARDS INSTITUTION

MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

**SPECIFICATION FOR
RATIONALIZED STEELS FOR
AUTOMOBILE AND ANCILLARY INDUSTRY,
MECHANICAL AND PHYSICAL PROPERTIES
PART 5 35C8 GRADE STEEL**

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Indian Standard

SPECIFICATION FOR RATIONALIZED STEELS FOR AUTOMOBILE AND ANCILLARY INDUSTRY, MECHANICAL AND PHYSICAL PROPERTIES

PART 5 35C8 GRADE STEEL

0. F O R E W O R D

0.1 This Indian Standard (Part 5) was adopted by the Indian Standards Institution on 26 December 1985, after the draft finalized by the Co-ordinating Committee on Materials for Automobiles had been approved by the Structural and Metals Division Council.

0.2 The Part 1 of this standard was published in 1979 which covered the chemical composition of 33 rationalized steels. The mechanical properties, hardenability and isothermal transformation characteristics of these 33 rationalized steels are now being covered in different parts of this standard (Parts 2 to 34). The data concerning these properties given in this standard is only for guidance and information purposes.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard (Part 5) covers the chemical composition and mechanical properties of 35C8 grade of steel for use by automobile and ancillary industry.

1.2 It is an unalloyed steel, intended to be used in the hardened and tempered condition.

*Rules for rounding off numerical values (revised).

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2. CHEMICAL COMPOSITION

2.1 The chemical composition of this grade of steel shall be as given below:

<i>Constituents, Percent</i>				
C	Si	Mn	S	P
0.30-0.40	0.15-0.35	0.60-0.90	0.035 <i>Max</i>	0.035 <i>Max</i>

3. HARDNESS

3.1 The hardness for this grade of steel delivered in the annealed or normalized condition, when determined in accordance with IS : 1500-1983*, shall be 197 HB maximum.

3.2 The surface hardness obtainable of this grade of steel by flame or induction hardening shall be 51-57 HRC.

4. MECHANICAL PROPERTIES

4.1 The mechanical properties of this grade of steel in the normalized, hardened and tempered condition, when determined in accordance with IS : 1598-1977† and IS : 1608-1972‡, shall be as given below:

	<i>Hardened and Tempered</i>	<i>Normalized</i>
Tensile strength, MPa	600-750	540 <i>Min</i>
Yield strength, MPa, <i>Min</i>	400	280
Elongation, percent, gauge length 5.65 \sqrt{A} , <i>Min</i>	16	20
Izod impact value, joules, <i>Min</i> , at room temperature	33	—
Limiting ruling section, mm	30	—

5. HOT WORKING AND HEAT TREATMENT TEMPERATURES

5.1 The recommended hot working and heat treatment temperatures are given below:

Forging/rolling temperature	1 250°C
Annealing temperature	650-880°C

*Method for Brinell hardness test for metallic materials (*second revision*).

†Method for Izod impact test of metals (*first revision*).

‡Method for tensile testing of steel products (*first revision*).

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Subcritical annealing temperature	650-700°C
Normalizing temperature	850-880°C
Hardening temperature	840-880°C
Tempering temperature	660°C <i>Max</i>

6. MACHINABILITY

6.1 The machinability of this grade of steel in the normalized condition is approximately 75 percent of that for mild steel (20C8), whilst in the hardened and tempered condition it is 65-70 percent of that for mild steel (20C8).

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Panel to Collect Data on Steel for Automobile Purposes, SMDC 31 : P12

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